

CLAIMS

1. An apparatus for treating fluids, comprising:
a pump including an inlet coupled with a fluid source and an outlet therefrom;
a housing including a vortex nozzle assembly therein; and
a manifold coupled to the outlet of the pump and to the housing, wherein the manifold is adapted to deliver a flow of fluid to the housing.
2. The apparatus for treating fluids according to claim 1, further comprising a pump support adapted to support the pump thereon.
3. The apparatus for treating fluids according to claim 2, wherein the pump support permits rearward movement of the pump.
4. The apparatus for treating fluids according to claim 2, wherein the pump support permits pivoting of the pump.
5. The apparatus for treating fluids according to claim 1, wherein the pump is oriented vertically to permit the staging of pump impellers.
6. The apparatus for treating fluids according to claim 1, further comprising a frame.
7. The apparatus for treating fluids according to claim 6, wherein the frame supports the pump to prevent loading of the pump by plumbing connecting the fluid source to the pump.
8. The apparatus for treating fluids according to claim 6, wherein the frame supports the housing.
9. The apparatus for treating fluids according to claim 8, further comprising bushings between the frame and the housing to prevent the transfer of noise from the housing to the frame.

10. The apparatus for treating fluids according to claim 1, wherein the manifold receives a fluid flow from the pump and divides the fluid flow into a first fluid flow and a second fluid flow.
11. The apparatus for treating fluids according to claim 1, wherein the manifold comprises an inlet coupled with the outlet of the pump.
12. The apparatus for treating fluids according to claim 11, wherein the manifold comprises a flow divider coupled with the inlet, whereby the flow divider receives a fluid flow from the pump via the inlet and divides the fluid flow into a first fluid flow and a second fluid flow.
13. The apparatus for treating fluids according to claim 12, wherein the flow divider is Y-shaped to provide a smoother transition of the fluid flow from the inlet into the first fluid flow and the second fluid flow.
14. The apparatus for treating fluids according to claim 12, wherein the manifold comprises a first elbow coupled with the flow divider and adapted to receive the first fluid flow.
15. The apparatus for treating fluids according to claim 12, wherein the manifold comprises a second elbow coupled with the flow divider and adapted to receive the second fluid flow.
16. The apparatus for treating fluids according to claim 14, wherein the manifold comprises a first coupling coupled with the first elbow, whereby the first coupling receives the first fluid flow and delivers the first fluid flow to the housing.
17. The apparatus for treating fluids according to claim 16, wherein the first coupling is flexible to reduce the transfer of sound from the manifold to the housing.
18. The apparatus for treating fluids according to claim 15, wherein the manifold comprises a second coupling coupled with the second elbow, whereby the second coupling receives the second fluid flow and delivers the second fluid flow to the housing.

19. The apparatus for treating fluids according to claim 18, wherein the second coupling is flexible to reduce the transfer of sound from the manifold to the housing.
20. The apparatus for treating fluids according to claim 10, wherein the housing includes a first inlet that receives the first fluid flow and a second inlet that receives the second fluid flow.
21. The apparatus for treating fluids according to claim 20, wherein the vortex nozzle assembly comprises a first vortex nozzle positioned within the housing in opposed relationship to a second vortex nozzle also positioned within the housing.
22. The apparatus for treating fluids according to claim 21, wherein the housing defines a first cavity that delivers the first fluid flow to the first vortex nozzle, whereby the first vortex nozzle receives fluid therein and imparts a rotation to the fluid, thereby creating a first rotating fluid flow.
23. The apparatus for treating fluids according to claim 21, wherein the housing defines a second cavity that delivers the second fluid flow to the second vortex nozzle, whereby the second vortex nozzle receives fluid therein and imparts a rotation to the fluid, thereby creating a second rotating fluid flow.
24. The apparatus for treating fluids according to claim 21, wherein the positioning in the housing of the first vortex nozzle in opposed relationship to the second vortex nozzle defines a collision chamber where impingement of the first rotating fluid flow with the second rotating fluid flow occurs.
25. The apparatus for treating fluids according to claim 24, wherein the collision chamber communicates with an outlet of the housing.
26. The apparatus for treating fluids according to claim 25, wherein the outlet is located above the collision chamber to maintain a flooded condition within the collision chamber.

27. The apparatus for treating fluids according to claim 25, wherein the outlet comprises an elbow that horizontally redirects fluid flow from the collision chamber.
28. The apparatus for treating fluids according to claim 1, wherein the housing includes an aperture that permits the measurement of vacuum within the vortex nozzle assembly.
29. The apparatus for treating fluids according to claim 28, wherein the housing includes a self-actuating seal positioned over the aperture.
30. The apparatus for treating fluids according to claim 29, wherein the self-actuating seal comprises a guide seal adapted to fit within an end cap.
31. The apparatus for treating fluids according to claim 1, further comprising a cabinet.
32. The apparatus for treating fluids according to claim 31, wherein the cabinet includes a sound wall that reduces noise created by fluid moving within the manifold and the housing.
33. A method of treating a fluid, comprising:
positioning a first vortex nozzle in opposed relationship to a second vortex nozzle;
inletting a first fluid flow into a cavity surrounding the first vortex nozzle;
inletting fluid from the first fluid flow into the first vortex nozzle to create a first rotating fluid flow;
inletting a second fluid flow into a cavity surrounding the second vortex nozzle;
inletting fluid from the second fluid flow into the second vortex nozzle to create a second rotating fluid flow; and
impinging the first rotating fluid flow with the second rotating fluid flow in a collision chamber.
34. The method of treating a fluid according to claim 33, further comprising outletting fluid from the collision chamber through an outlet located above the collision chamber.

35. The method of treating a fluid according to claim 33, further comprising:
providing a fluid flow from a fluid source;
inletting the fluid flow into a manifold that divides the fluid flow into the first fluid flow and the second fluid flow.
36. The method of treating a fluid according to claim 35, wherein the manifold includes a Y-shaped flow divider to provide a smoother transition of the fluid flow into the first fluid flow and the second fluid flow.
37. The method of treating a fluid according to claim 35, wherein the manifold includes couplings that are flexible to provide sound dampening.
38. A method of manufacturing a vortex nozzle adapted to provide vacuum measurements, comprising:
inserting a conduit through an aperture in a housing having the vortex nozzle therein;
placing one end of the conduit in a cavity of the vortex nozzle; and
securing a self-actuating seal over the aperture.